



MINGDONG LI

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The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong

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EDUCATION

The Hong Kong University of Science and Technology *Sep. 2021 - Jul. 2025 (expected)*

PhD in Individualized Interdisciplinary Program (Robotics and Autonomous System)

Academy of Interdisciplinary Studies

Computational Cognitive Engineering Lab

Supervisor: Prof. Yiwen WANG, Prof. Qifeng CHEN (co-supervision)

Heidelberg University

2025

Visiting Scholar, BMBF Research Group at Interdisciplinary Center for Scientific Computing

Dynamical Systems and Artificial Intelligence Lab

Supervisor: Prof. Zahra Monfared

Zhejiang University

2018-2021

Master of Mechanical Engineering

The State Key Lab of Fluid Power & Mechatronic Systems

Supervisor: Prof. Yixiong FENG

Tongji University

2013-2018

Bachelor of Mechanical Design Manufacture and its Automation

Pilot Sino-German Program for Undergraduate in Mechanical Engineering (Honor Class)

RESEARCH INTEREST

Brain-machine Interfaces, NeuroAI, Brain-inspired Intelligence, Cognitive Analysis, Wearable Device

WORKING PAPER

1. **Mingdong Li**, Shuhang Chen, Zhiwei Song, Xiang Zhang, Camilo Libedinsky, Rosa So, Yiwen Wang*. Assessing Modifications of Functional Neural Connectivity in Point Process Filter for Neuroprosthetic Control, *IEEE Transactions on Biomedical Engineering*. (to be submitted)
2. Zhiwei Song, Xiang Zhang, **Mingdong Li**, Jieyuan Tan, Yiwen Wang*. An Online Knowledge Transfer Framework for Task Learning in Brain-Machine Interfaces, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. (under review)

PUBLICATION (JOURNAL)

1. **Mingdong Li**, Shuhang Chen[†], Xiang Zhang, Yiwen Wang*. Neural Correlation Integrated Adaptive Point Process Filtering on Population Spike Trains, *IEEE Transactions on Neural Systems and Rehabilitation Engineering (TNSRE)*, 2025. (accepted, [†]: co-first author)
2. **Mingdong Li**, Shanhe Lou*, Hao Zheng, Yixiong Feng, Yicong Gao, Siyuan Zeng, Jianrong Tan. A Cognitive Analysis-based Key Concepts Derivation Approach for Product Design, *Expert Systems With Applications (ESWA)*, 2024.
3. **Mingdong Li**, Shanhe Lou*, Yicong Gao, Hao Zheng, Bingtao Hu, Jianrong Tan. A Cerebellar Operant Conditioning-inspired Constraint Satisfaction Approach for Product Design Concept Generation, *International Journal of Production Research (IJPR)*, 2023.

4. Xuanyu Wu, Zhaoxi Hong*, Yixiong Feng, **Mingdong Li**, Shanhe Lou, Jianrong Tan. A Semantic Analysis-driven Customer Requirements Mining Method for Product Conceptual Design, *Scientific Reports (Sci. Rep.)*, 2022.
5. Yixiong Feng, **Mingdong Li**, Shanhe Lou*, Yicong Gao, Jianrong Tan. A Digital Twin-Driven Method for Product Performance Evaluation Based on Intelligent Psycho-Physiological Analysis, *ASME Journal of Computing and Information Science in Engineering (JCISE)*, 2021.

PUBLICATION (CONFERENCE & ABSTRACT & PATENT)

1. **Mingdong Li**, Mingyi Wang, Yiwen Wang*. An Adaptive Superposition Point Process Model with Neuronal Encoding Engagement Identification, *2024 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*. (Oral)
2. Zixu Wang, Shuhang Chen†, **Mingdong Li**, Yiwen Wang*. Tracking Dynamic Conditional Neural Correlation during Task Learning, *2024 46th EMBC*. (Oral, †: co-first author)
3. **Mingdong Li**, Shuhang Chen, Zhijia Zhao, Yiwen Wang*. Tracking the Dynamic Functional Neural Connectivity via Conjugate Gradient Optimization, *2023 45th EMBC*. (Oral)
4. **Mingdong Li**, Shuhang Chen, Xi Liu, Zhiwei Song, Yiwen Wang*. Modeling Neural Connectivity in a Point-Process Analogue of Kalman Filter, *2022 44th EMBC*. (Oral)
5. **Mingdong Li**, Jieyuan Tan, Zhiwei Song, Yiwen Wang*. Modeling Neural Population Dynamics in a Point Process Filter for Neuroprosthetics Control, *Annual Conference of International Association of Neurorestoratology (IANR) 2024* (Abstract, Poster)
6. Y. Feng, **Mingdong Li**, Y. Gao. CN110090818B, Chinese Patent Authorized, 2020
7. M. Li, Y. Zhang, N. Xu, **Mingdong Li**, S. Liu. CN106127958B, Chinese Patent Authorized, 2018

PROJECT

1. Point process filtering and neural population coding for invasive BCI (PhD thesis) 2021-2025
2. Memory encoding analysis, Beijing Tiantan Hospital-HKUST 2024.10-now
 - lead memory encoding analysis of Substantia Nigra for Parkinson's Disease
3. Managing surgery of implementing electrodes for rats 2023.9-2024.9
 - organize surgery tutorials and surgery for more than 30 times
4. Managing rats behavioral training 2022.9-2023.9
 - organize rat two-lever discrimination training for more than 130 days
 - maintain and update devices for behavioral training and neural signal recording
5. Intelligent product scheme design (Master thesis) 2018-2021
 - based on cognition analysis, NLP and EEG analysis
6. Matlab Mobile for step measurement and trajectory reconstruction 2018
7. Shanghai Undergraduate Innovation Program (as team leader) 2015-2016
 - product design of a candy packing machine
 - lead task decomposition, structure modeling and pneumatic system designing

PRIZES AND ACHIEVEMENTS

DAAD AInet fellowship (AI4Science), German Academic Exchange Service	2024
NextGen Scholar Award (IEEE Annual International Conference of EMBS)	2024
Zhejiang University Dissertation Year Fellowship (Top 1%)	2021
ZHEJIANG Lab AI Competition (Multiple Objects Tracking track), Excellence Prize	2019

1st prize, No.7 National College Mechanical Design Innovation Competition	2016
1st prize, Shanghai College Mechanical Innovation Competition	2016
Tongji Academic Scholarship, 2nd prize for 2 times and 3rd prize for 1 time	2013-2018

ACADEMIC SERVICE

Reviewer: ISBI2025, NER2025, TIV	
Programme committee, 4th International Workshop on Neural Engineering & Rehabilitation	2023.08
Programme committee, 3rd International Workshop on Neural Engineering & Rehabilitation	2022.05

TEACHING AND MENTORING

TA, EMIA4110 Practical Machine Learning	2024 Spring
TA, ELEC4130 Machine Learning on Images	2023 Spring
Mentoring: point process filtering for neural spiking signals (HKUST)	
• Tianyi Hu, now undergraduate of University of Science and Technology of China	2024.6-2024.9
Mentoring: surgery of implanting electrodes for rats (HKUST)	
• Shicheng Qiu, now HKUST MPhil student	2023.9-2024.9
Mentoring: cognitive analysis, language model, EEG analysis, academic writing (Zhejiang Uni.)	
• Xuanyu Wu, now PhD candidate of Zhejiang Uni.	2020.9-2022.9

INTERNATIONAL COLLABORATION

Prof. Jose Principe, University of Florida
 Prof. Camilo Libedinsky, National University of Singapore
 Prof. Zahra Monfared, Heidelberg University

PERSONAL SKILLS

Coding: Python/Matlab/C++/Pytorch toolbox
 Surgery for implementing electrodes into M1 and mPFC of SD Rat
 Establish system for animal behavioral training, neural signal recording and analysis
 Product Design: AutoCAD/Inventor/Solidworks/Ansys
 Language: Chinese, English, German